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TRU-TAP™
HIGH-SPEED
CNC TAPPING
ATTACHMENTS

SERIES 15000
and 16000

INSTRUCTION MANUAL

INTRODUCTION

PROCUNIER TRU-TAP™ Series 15000 and 16000 high-speed tapping attachments were designed to provide a high-quality, high-precision method of tapping on CNC machining centers without the need for reversing the machine motor.

The TRU-TAP incorporates the same unique design features as other PROCUNIER products that have shown successful operation in scores of applications for over 50 years. These include the TRU-GRIP™ tap chuck or Quick Change spindle that assures tap accuracy by holding the round of the tap and providing positive drive from the square. The smooth action of the friction clutch provides instantaneous engagement and disengagement as determined by the machine spindle feed.

MOUNTING

V-FLANGE HOLDERS:

Insert shank into the collet and/or V-Flange holder, then secure in place. Any type of V-Flange holder which accepts a 3/4" or 1" O.D. shank can be used. Lock on as much of the shank as practicable. **Short projection V-Flanges are preferable.**

STOP ROD: (Except 15001/16001)

All Series 15000 and 16000 tappers are equipped with a spindle orientation stop rod slide assembly, which is necessary when any automatic tool changer is used. Insert the TRU-TAP tapper with its V-Flange holder into the spindle of the machining center. Loosen the three (3) set screws in the locator (G) and rotate stop rod slide assembly and locator until the stop rod (3/8" dia.) is aligned in the desired location. Retighten the three (3) set screws to lock in proper position. The stop rod is made to fit into a 3/8" diameter blind hole a minimum of 1/2" deep. This hole can either be drilled into the machine casting, or an adapter block can be attached to the quill so that it moves with the tapper. If the machine has a built-in stop rod adapter, a new stop rod bracket (D) and stop rod (B) may have to be fabricated. Procunier will make these special to your exact specifications.

After the stop rod has been properly located and engaged to stop all tapper body rotation, the 3/8" stop rod must be adjusted to release the machine spindle orientation lock mechanism of the tapper. To accomplish this, loosen the stop rod lock nut (C) and screw the stop rod (B) up until the slide (E) has moved down 1/4" to 3/8" as shown in figure A. Tighten the lock nut. The shank of the tapper is now free to rotate. Check that the tool changer will remove, store and reinsert the tapper correctly.

OPERATION

PROGRAMMING:

Select the proper R.P.M. to be used depending upon the size of the tap and the material to be tapped. See engineering chart in catalog for general starting speeds. Do not exceed the tapping head rated speed.

The TRU-TAP CNC tapping head may be programmed by using either the standard bore cycle with no dwell (usually G 85 machine code), or by programming each movement individually (straight line speed, feed and depth in ... then feed and travel to return).

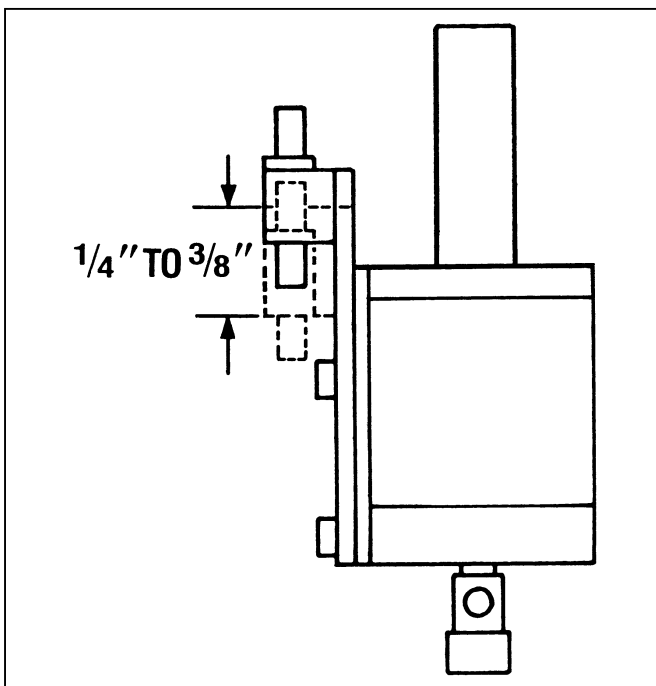


FIGURE A: Stop Rod Adjustment
(Except 15001/16001)

FEED RATE:

These tappers are made to be programmed at 100% feed rate. The feed rate is calculated by dividing the R.P.M. by the pitch of tap (threads per inch). **CAUTION: Do not exceed the 100% feed rate.**

When programming is done line by line (not using G 85 bore cycle), the retract feed rate should be twice (2x) that of the "in" feed rate to allow for the tappers built-in 2:1 reverse. When using the bore cycle program, the tapper will automatically compensate for the 2:1 reverse. **NOTE: Line by line programming is recommended.**

DEPTH:

The internal drive clutch of the tapper will disengage instantaneously when the forward feed is halted. Therefore, the tap can be programmed to the actual depth required. **The tapper will repeat depth within 1/3 turn.**

GENERAL

The tapping cycle should begin a minimum of .200" above the part. The tapper has a built-in reversing mechanism so it is not necessary to reverse the machine spindle rotation.

STANDARD AND OPTIONAL EQUIPMENT:

Tapping Heads include the following standard equipment: one (1) set wrenches and one (1) set of collets. See catalog for other options: collet adapter for external threading, button (Style TRC) Series 57490 dies; and additional PROCUNIER TRU-GRIP or Quick Change Tap Collets to fit all standard inch or metric taps.

LEFT-HAND OPERATION:

When using left-hand taps, reverse the rotation of the CNC machining center (left to right operation) and modify the cover assembly of the tapper (pin shank, drive shell and internal ring gear) so that they will not unscrew.

NOTE: Alteration or Modification to unit will void warranty.

LUBRICATION:

Lubricate Oil Felt and Planetary Gears with a light grade of synthetic oil (SAE 5-10W) approximately every 2 months. **Do not flood**, since glazing of the clutch will reduce drive capacity. Under heavy use, remove the clutch and clean it periodically (See Disassembly Instructions.) Re-lubricate all gears if required.

TAPPING RECOMMENDATIONS

- Never exceed the rated capacity of the Tapping Head. Thread rolling taps require **more** torque than cutting taps. Recommended capacities are:

Series Tapper	Cutting Taps	Forming Taps
15000	#10 (M5) Mild Steel 1/4" (M6) Aluminum	#6 (M3.5) #8 (M4.5)
16000	5/16" (M8) Mild Steel 1/2" (M12) Aluminum	#10 (M5) 1/4" (M6)

- Maximum Tapping Head speeds:
3,000 RPM — 15000 Series
2,500 RPM — 16000 Series
- High-Speed Ground Thread Taps are recommended for best results. When tapping thru-holes in steel, or other materials which produce ribbon chips, spiral pointed or gun taps are recommended. For blind holes, use spiral-fluted, standard plug or bottoming taps. Consult the tap manufacturer for the proper type and style of tap that should be used.
- A good grade of oil coolant flowed on the tap will assure longer tap life, provide a better finish and reduce downtime. **Water soluble without oil is not recommended because it will increase torque and reduce tapping capacity.**
- Proper feeds and speeds are essential to avoid stripping or damaging the threads in high-speed tapping.

DISASSEMBLY INSTRUCTIONS

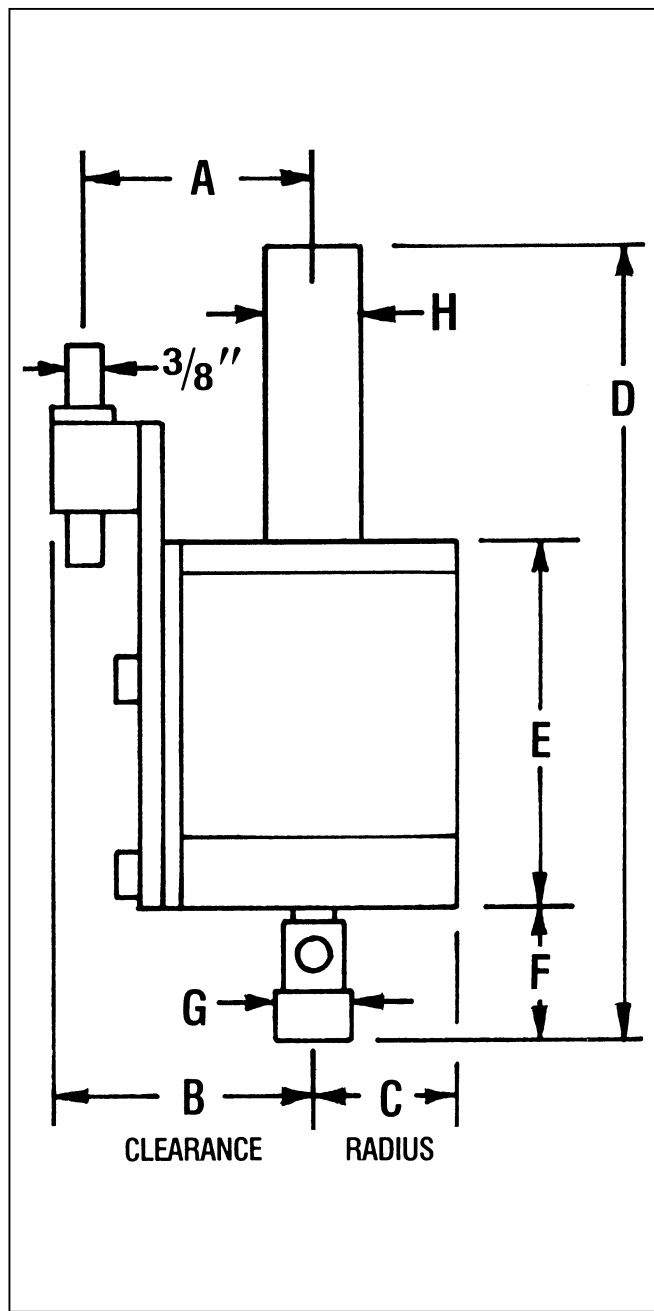
Disassembly of the Tapping Head is easily accomplished by following the proper sequence:

- Disassemble the slide assembly from the tapper by removing two screws (U). The slide (E) and slide plate (J) are spring-loaded. **Use caution when removing screws (U).**
- Remove cover screws (KK) from bottom of head and remove cover assembly (top) from body.
- Remove the two clutch screws (EE) on 15000 Series. Remove lock nut on 16000 Series.
- Push clutch pin out of clutch (EE) on 15000 Series.
- Remove clutch (EE) lock ring with split collar, clutch spring (FF), reverse shell assembly (K), and TRU-GRIP spindle (Q).

Clean the clutch by wiping with a cloth dipped in a good non-residue cleaning solution such as alcohol or acetone. (Do not use paint thinner.) **Cork surface should never be sanded, filed or roughed up. Do not dip the head in cleaning fluid, since this could wash dirt or grit into the ball bearings.** Regrease body bearings (JJ) and reverse gear bushings with a good grade teflon impregnated grease and saturate the oil felt (P) with synthetic oil (SAE 5-10W).

When reassembling, make sure clutch spring (FF) is properly positioned with the fiber washer on reverse shell assembly. Secure clutch pin in operating position by locking the clutch screws tight on 15000 Series or torque lock nut 20-23 ft./lbs. on 16000 Series.

Two screws (U) on slide assembly must be sealed using a sealant such as LOCTITE when replacing.



SERIES	A	B	C	D	E	F	G	H
15001	2 ³ / ₁₆ "	2 ¹ / ₄ "	1 ¹⁹ / ₃₂ "	7 ³ / ₁₆ "	3 ⁷ / ₈ "	1 ⁵ / ₁₆ "	3/4"	1"
15008	2 ⁵ / ₈ "	3 ¹ / ₁₆ "	1 ¹⁹ / ₃₂ "	7 ³ / ₁₆ "	4 ¹ / ₈ "	1 ⁵ / ₁₆ "	3/4"	3/4"
15010	2 ⁵ / ₈ "	3 ¹ / ₁₆ "	1 ¹⁹ / ₃₂ "	7 ³ / ₁₆ "	4 ¹ / ₈ "	1 ⁵ / ₁₆ "	3/4"	1"
16001	2 ³ / ₁₆ "	2 ¹ / ₄ "	1 ²³ / ₃₂ "	8 ⁷ / ₈ "	4 ³ / ₄ "	2 ¹ / ₄ "	1"	1"
16008	2 ²⁵ / ₃₂ "	3 ³ / ₁₆ "	1 ²³ / ₃₂ "	8 ⁷ / ₈ "	5 ¹ / ₁₆ "	2 ¹ / ₄ "	1"	3/4"
16010	2 ²⁵ / ₃₂ "	3 ³ / ₁₆ "	1 ²³ / ₃₂ "	8 ⁷ / ₈ "	5 ¹ / ₁₆ "	2 ¹ / ₄ "	1"	1"

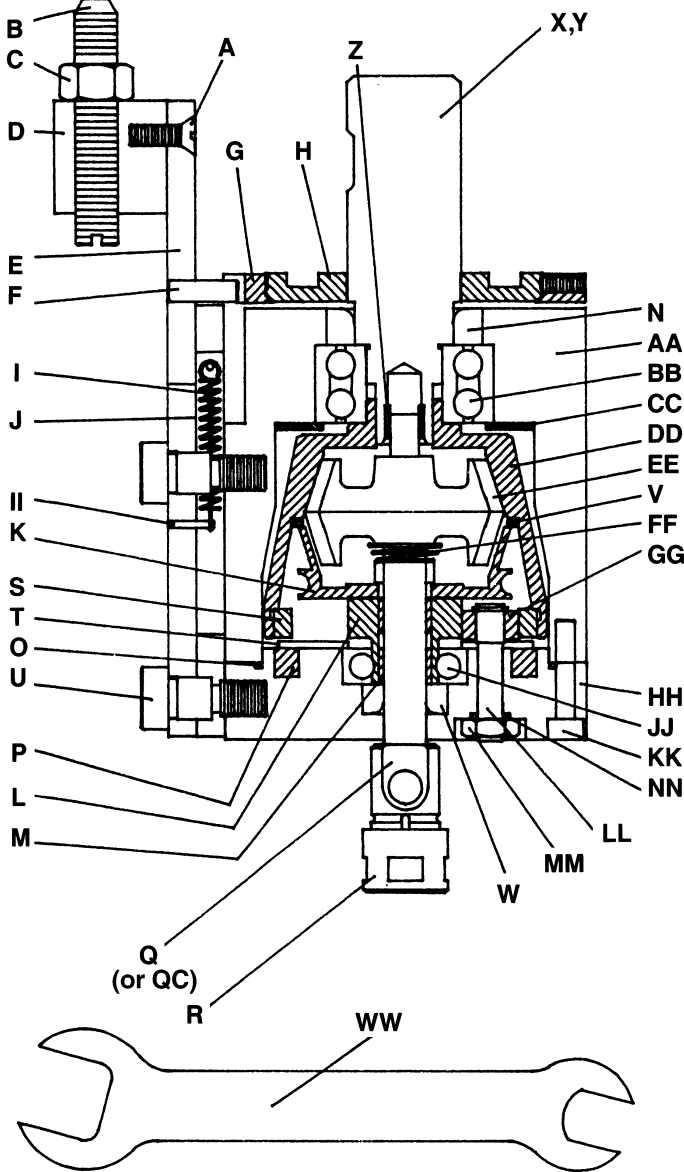
Collets

Series	Range
15000	Tap: #0 to 1/4" (M2 to M6)
16000	Tap: #8 to 1/2" (M5 to M12)

When ordering, specify both tapper model and tap size. See Catalog Series 51800 or 58800 (15000) and 52800 or 598000 (16000).

PARTS LIST

CODE LTR	DESCRIPTION	QTY REQ.	SERIES 15000	SERIES 16000
A	Screw	2	15226	15226
B	Stop Rod	1	15224	15224
C	Nut	1	33678	33678
D	Stop Rod Bracket	1	15225	15225
E	Slide	1	15221	15221
F	Lock Pin	1	15223	15223
G	Locator with Set Screw	1	15235	16235
H	Locator Disk	1	15236	15236
I	Tension Spring	2	15227	15227
II	Tension Spring Pin	4	15230	15230
J	Slide Plate	1	15222	15222
K-M	Reverse Shell Assembly	1	11266	16266
K	Reverse Shell	1	11267	16267
L	Reverse Gear Only	1	11269	11269
M	Reverse Gear Bushing	2	11270	—
—	Reverse Gear Screw	4	16272	16272
N	Upper Seal	1	15237	16237
O	"O" Ring	1	15275	15275
P	Oil Felt	1	15247	16247
Q	Tru-Grip Spindle	1	11286	16287
QC	QC Spindle Assembly	1	11290	16290
R	Tru-Grip Nut	1	11287	12287
S	Ring Gear	1	11233	11233
T	Stud Plate	1	11248	16248
U	Slide Screw with Washer	2	15229	15229
V	Separator Ring	1	11234	11234
W	Lower Seal	1	15251	16251
Y	Shank w/Bushing 1"	1	15200	16200
Y	Shank w/Bushing 3/4"	1	15202	16202
Z	Shank Bushing	1	11220	12220
AA	Cover	1	15234	16234
AA	Cover (15001 / 16001)	1	15233	16243
BB	Cover Ball Bearing	1	15238	12221
CC	Cover Bearing Retainer	1	11228	16232
—	Cover Retainer Screw	4	11229	16233
DD	Drive Shell	1	11231	16231
EE	Clutch Assembly	1	11256	16254
—	Clutch Pin	1	11260	—
—	Lock Ring w/Split Collar	1	—	16277
—	Lock Ring Only	1	—	16278
—	Split Collar Only	1	—	16279
—	Lock Nut	1	—	16280
FF	Clutch Spring Assembly	1	15263	16263
GG	Pinion Gear	3-4	11254	11254
HH	Body	1	15245	16245
HH	Body (115001 / 16001)	1	15244	16245
JJ	Body Ball Bearing	1	11273	11273
KK	Cover Screw	4	15239	15239
LL	Stud with Washer & Snap Ring	3-4	11249	11249
MM	Stud Nut	3-4	11252	11252
NN	Stud "O" Ring Seal	3	15249	15249
WW	Wrenches	2	11288	12288



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